

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application.

**Listing of Claims:**

5      Claim 1 (currently amended): A method for improving processing efficiency of pipeline architecture with a processor, the processor having:  
          a first functional unit for executing a calculation task;  
          a second functional unit for executing another calculation task; and  
          a control unit electrically connected to the first and the second functional units for  
10     generating a plurality of control signals to control the first and the second  
          functional units;  
          the method comprising:  
          (a) executing a first calculation task with the first functional unit or the second  
              functional unit;  
15     (b) determining an executing time period of a second calculation task with the  
              control unit according to the functional unit executing the first calculation task,  
              an executing time period of the first calculation task, and whether the second  
              calculation task depends upon a result of the first calculation task; and  
          (c) executing the second calculation task with the first functional unit according to  
20     the executing time period of the second calculation task determined in step  
          (b)[[.]];  
          wherein when a calculation task executed by the second functional unit requires  
          more instruction cycles than that of the first functional unit, the control signals  
          control the first and the second functional units to execute the first calculation  
25     task within a first time period and a second time period, and to execute the  
          second calculation task within the second time period and a third time period  
          sequentially, the method further comprises:

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when the first calculation task is executed by the second functional unit within the first and the second time period and the second calculation task is executed by the first functional unit, if the second calculation task does not depend upon the result of the first calculation task, executing the second calculation task with the first functional unit within the second time period, if the second calculation task depends upon the result of the first calculation task, executing the second calculation task with the first functional unit within the third time period;

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when the first calculation task is executed by the first functional unit within the first time period and the second calculation task is also executed by the first functional unit, if the second calculation task does not depend upon the result of the first calculation task, executing the second calculation task with the first functional unit within the second time period, if the second calculation task depends upon the result of the first calculation task, executing the second calculation task with the first functional unit within the third time period; and

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when the first calculation task is executed by the first functional unit within the second time period and the second calculation task is also executed by the first functional unit, executing the second calculation task with the first functional unit within the third time period.

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Claim 2 (cancelled)

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Claim 3 (currently amended): The method of claim [[2]] 1 wherein lengths of the first, the second, and the third time periods are all equal to one instruction cycle.

Claim 4 (currently amended): The method of claim [[2]] 1 wherein the first, the second, and the third time periods are non-overlapping with one another.

Claim 5 (currently amended): The method of claim [[2]] 1 wherein the second time period is later than the first time period and the third time period is later than the second time period.

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Claim 6 (original): A method for improving processing efficiency of pipeline architecture with a processor, the processor having:

a first functional unit for executing a calculation task requiring a calculating time of one instruction cycle;

10 a second functional unit for executing a calculation task requiring a calculating time of two instruction cycle; and

a control unit electrically connected to the first and the second functional units for generating a plurality of control signals to control the first and the second functional units, so as to execute a first calculation task within a first time period and a second time period, and to execute a second calculation task within the second time period and a third time period sequentially, lengths of the first, the second, and the third time periods being all equal to one instruction cycle, the first, the second, and the third time periods being non-overlapping with one another, the second time period being later than the first time period and the third time period being later than the second time period;

the method comprising:

when the first calculation task is executed by the second functional unit within the first and the second time period and the second calculation task is executed by the first functional unit, if the second calculation task does not depend upon the result of the first calculation task, executing the second calculation task with the first functional unit within the second time period, if the second calculation task depends upon the result of the first calculation task, executing

the second calculation task with the first functional unit within the third time period;

when the first calculation task is executed by the first functional unit within the first time period and the second calculation task is also executed by the first functional unit, if the second calculation task does not depend upon the result of the first calculation task, executing the second calculation task with the first functional unit within the second time period, if the second calculation task depends upon the result of the first calculation task, executing the second calculation task with the first functional unit within the third time period; and

5 when the first calculation task is executed by the first functional unit within the second time period and the second calculation task is also executed by the first functional unit, executing the second calculation task with the first functional unit within the third time period.

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